

Claims

We claim:

1. A method for performing machine vision inspection of a display device,
5 the method comprising:

configuring a display inspection algorithm comprising a plurality of display
inspection functions operable to perform machine vision tests on the display device;

programmatically generating a test executive sequence that implements the
display inspection algorithm; and

10 executing the test executive sequence to perform the machine vision tests on the
display device.

2. The method of claim 1,

wherein said programmatically generating the test executive sequence comprises
15 generating the test executive sequence without receiving user input specifying the test
executive sequence.

3. The method of claim 1, further comprising:

displaying a graphical user interface of a display inspection test configurator,
20 wherein the graphical user interface of the display inspection test configurator enables a
user to interactively specify the display inspection algorithm; and

receiving user input specifying the display inspection algorithm to the graphical
user interface of the display inspection test configurator, wherein the user input specifies
the plurality of display inspection functions.

4. The method of claim 1,

wherein said programmatically generating the test executive sequence comprises
programmatically including a plurality of test executive steps for display inspection in the
test executive sequence.

5. The method of claim 4,

wherein each test executive step for display inspection corresponds to a display inspection function in the display inspection algorithm.

6. The method of claim 4,
5 wherein each test executive step for display inspection is configured to call one of the display inspection functions as an external code module.

7. The method of claim 4,
10 wherein the programmatically generated test executive sequence also includes one or more test executive steps to perform initialization of one of:
a hardware device;
the display inspection functions.

8. The method of claim 1, further comprising:
15 configuring one or more of the display inspection functions in the display inspection algorithm;
wherein, for each display inspection function, configuring the display inspection function comprises:
displaying a specialized graphical user interface for configuring the
20 display inspection function; and
receiving user input to the graphical user interface to customize operation of the display inspection function.

9. The method of claim 8,
25 wherein the graphical user interface enables the user to specify one or more parameters of the display inspection function.

10. The method of claim 8,
30 wherein said configuring one or more of the display inspection functions comprises configuring the display inspection functions without specifying program code.

11. The method of claim 1,
wherein said programmatically generating the test executive sequence comprises
programmatically including a plurality of test executive steps for display inspection in the
test executive sequence;

5 wherein the method further comprises adding one or more additional test
executive steps to the test executive sequence in response to user input.

12. The method of claim 11,
wherein the one or more additional test executive steps include one or more of:
10 a test executive step to perform a shock test of the display device;
a test executive step to perform a noise-vibration-harshness (NVH) test of
the display device;

a test executive step to perform an audio test of the display device;
a test executive step to perform a mechanical test of the display device;
15 a test executive step to perform a battery test of the display device; and/or
a test executive step to perform an electrical test of the display device.

13. The method of claim 1,
wherein said programmatically generating the test executive sequence comprises
20 programmatically including a plurality of test executive steps for display inspection in the
test executive sequence;

wherein said executing the test executive sequence comprises executing the
plurality of test executive steps for display inspection to perform the machine vision tests
on the display device.

25 14. The method of claim 13,
wherein said executing the test executive sequence further comprises:
acquiring one or more images of the display device; and
analyzing the one or more images.

30 15. The method of claim 1,

wherein the display device comprises an LCD device.

16. The method of claim 1,
wherein the display device comprises an OLED device.

17. The method of claim 1,
wherein the display device comprises a flat panel display device.

18. The method of claim 1,
wherein the display device is included as a component in a product.

19. A system for performing display inspection, the system comprising:
a computer system which includes a processor and a memory medium, wherein
the memory medium stores:
a library of display inspection functions;
a test configurator which is executable to select a set of display inspection
functions in response to user input;
a plurality of test executive steps, wherein each of the plurality of test
executive steps is operable to perform display inspection;
an image acquisition device coupled to the computer system, wherein the image
acquisition device is operable to acquire an image of a display device being inspected;
wherein the test configurator is useable to programmatically generate a test
executive sequence to perform an inspection of a display device, wherein the test
executive sequence includes a set of test executive steps operable to invoke at least one of
the selected display inspection functions.

20. The system of claim 19,
wherein each of the at least one invoked display inspection functions are operable
to analyze an image of the display device acquired by the image acquisition device.

21. A computer-implemented method for creating a test executive sequence for a display inspection application, the method comprising:

5 displaying an image on a display, wherein the image corresponds to a display device;

displaying a display inspection test configurator which is executable to configure a set of display inspection functions in response to user input;

10 generating a test executive sequence based on the configured set of display inspection functions;

wherein the test executive sequence comprises a plurality of test executive steps operable to analyze the image of the display device to perform display inspection.

22. The method of claim 21, further comprising:

15 receiving an image of a display device being inspected; and
executing the test sequence to inspect the display device.

23. A memory medium for storing :

20 a library of display inspection functions;

a plurality of test executive steps, wherein each of the plurality of test executive steps is operable to perform display inspection;

a test configurator which is executable to configure a test executive sequence including one or more of the test executive steps;

25 program instructions executable to perform:

displaying an image of a display device on a display;

displaying the test configurator which is executable to configure the test executive sequence;

30 receiving user input to the test configurator to select one or more of the test executive steps, wherein each of the selected test executive steps is operable to perform display inspection;

wherein the user input in said step of receiving operates to produce a test executive sequence for analyzing the image of the display device.

5 24. A method for inspecting a display device, the method comprising:
 configuring a display inspection algorithm comprising a plurality of display
 inspection functions operable to perform tests on the display device;
 programmatically generating a test executive sequence that implements the
 display inspection algorithm; and
10 executing the test executive sequence to perform the tests on the display device.

25. The method of claim 24,
 wherein said programmatically generating the test executive sequence comprises
 generating the test executive sequence without receiving user input specifying the test
15 executive sequence.

26. The method of claim 24,
 wherein said programmatically generating the test executive sequence comprises
 programmatically including a plurality of test executive steps for display inspection in the
20 test executive sequence;
 wherein said executing the test executive sequence comprises executing the
 plurality of test executive steps for display inspection to perform the tests on the display
 device.

25 27. The method of claim 24,
 wherein the display inspection algorithm includes one or more display inspection
 functions operable to perform one or more machine vision tests on the display device;
 wherein said executing the test executive sequence to perform the tests on the
 display device includes executing one or more test executive steps in the test executive
30 sequence to perform the one or more machine vision tests on the display device.

28. The method of claim 27,
wherein said executing the test executive sequence to perform the tests on the
display device comprises:

5 acquiring one or more images of the display device; and
analyzing the one or more images.

29. The method of claim 24,
wherein the display inspection algorithm includes one or more display inspection
10 functions operable to perform one or more audio tests on the display device;

wherein said executing the test executive sequence to perform the tests on the
display device includes executing one or more test executive steps in the test executive
sequence to perform the one or more audio tests on the display device.

30. The method of claim 24,
wherein the display inspection algorithm includes one or more display inspection
functions operable to perform one or more noise-vibration-harshness (NVH) tests on the
display device;

wherein said executing the test executive sequence to perform the tests on the
display device includes executing one or more test executive steps in the test executive
sequence to perform the one or more noise-vibration-harshness (NVH) tests on the
display device.

31. The method of claim 24,
wherein the display inspection algorithm includes one or more display inspection
functions operable to perform one or more shock tests on the display device;

wherein said executing the test executive sequence to perform the tests on the
display device includes executing one or more test executive steps in the test executive
sequence to perform the one or more shock tests on the display device.

32. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more mechanical tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive
5 sequence to perform the one or more mechanical tests on the display device.

33. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more battery tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive
10 sequence to perform the one or more battery tests on the display device.

34. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more electrical tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive
15 sequence to perform the one or more electrical tests on the display device.

35. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more image processing tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive
20
25 sequence to perform the one or more image processing tests on the display device.